REMARKS

I. Introduction

These amendments and remarks are being filed in response to the Office Action dated March 17, 2008.

Claims 1-20 are currently pending, claims 21 and 22 have been canceled without prejudice. Claims 1-20 have been amended to correct informalities. As such no new matter has been added.

For the following reasons, the claims should be allowed and the application passed to issue.

II. Objections to the Abstract

The Abstract was objected to for allegedly containing legal phraseology. Applicants respectfully submit that the amendments to the Abstract obviate this objection and, therefore, withdrawal of the objection is requested.

III. Claim Informalities

The Examiner noted informalities in claim 1. It is respectfully submitted that claim 1 has now been amended to recite the method steps in alphabetical order (a) – (e).

IV. Claim Rejections under 35 U.S.C. § 112, second paragraph

A. Claims 21 and 22

Claims 21 and 22 were rejected under 35 U.S.C. § 112, second paragraph for allegedly being indefinite, as well as under 35 U.S.C. § 101. Applicants respectfully disagree with the

Examiner's position. However in an effort to expedite prosecution, claims 21 and 22 have been cancelled without prejudice, thereby obviating the rejections.

B. Claims 8-11, 18 and 19

Claims 8-11, 18 and 19 were rejected under 35 U.S.C. § 112, second paragraph for allegedly being indefinite for failing to point out and distinctly claim the subject matter regarded as the invention. As noted above, claims 1, 8-13 and 18 have been amended, with claim 1 now reacting method steps (a) to (e) in alphabetical order.

As such the amendments to the claims render the rejections moot.

V. Claim Rejections under 35 U.S.C. § 102(b)

A. Thatcher et al US Patent No. 5,981,735 ("Thatcher")

Claims 1, 2, 11-15, 17 and 19-22 were rejected under 35 U.S.C. § 102(b) as allegedly being unpatentable over Thatcher. Applicants respectfully disagree.

Claim 1 recites, in pertinent part,

> "A method for the chromatographic separation of a nucleic acid mixture wherein plasmid DNA is separated from other components of the mixture, especially other nucleic acids, characterised in that . . . **(d) the plasmid DNA bound to the chromatographic stationary phase is subsequently eluted with a solution comprising an alkali salt in a concentration of 1300 mM or higher based on a pH of 7 to 7.4 and/or an alkaline earth salt in a concentration of 270 mM or higher based on a pH of 7 to 7.4."**

Anticipation under 35 U.S.C. § 102 requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed Cir. 1987). At a minimum, the cited prior art does not disclose (expressly or inherently), a method in which "**(d) the plasmid DNA** bound to the chromatographic stationary phase is

subsequently **eluted with a solution comprising an alkali salt in a concentration of 1300 mM or higher based on a pH of 7 to 7.4 and/or an alkaline earth salt in a concentration of 270 mM or higher based on a pH of 7 to 7.4.**"

The Examiner refers to col. 16, lines 40-58 of Thatcher, for the alleged teaching of the method as recited in **step (d)** of instant claim 1. (See Office Action dated March 17, 2008 at page 4). In particular, it is alleged that Thatcher teaches an alkali earth salt in a concentration of 270 mM or higher. However, Thatcher does not disclose the use of alkali earth salts at all. In fact, the only salt that is disclosed for elution of the plasmids is sodium chloride, (see col. 16, lines 54-55), an alkali salt but, the concentration of sodium chloride used by Thatcher is outside the range recited in step (d) of claim 1.

Although Thatcher generally discloses a maximum elution concentration of 1.5 M (see col. 16, line 54), Thatcher explicitly states in col. 16, lines 56-57 that "[p]lasmid DNA is eluted in the 0.75 M to 1.0 M wash." That is, Thatcher distinguishes between elution in general and elution of plasmid DNA, explicitly requiring a lower concentration to elute plasmid DNA. Thus, it is clear that the elution concentration disclosed in Thatcher for the elution of plasmid DNA is markedly below the presently claimed range of 1300 mM for plasmid DNA as recited in claim 1, step (d).

Although the conditions for the High Resolution Anion Exchange Chromatography include a range of 0.7-1.5 M sodium chloride as eluting conditions, the elution solution used in Thatcher has a pH of 8.0, (see Thatcher at col. 17, lines 8-13), which is not within the pH range of 7.0 to 7.4 as recited in claim 1.

As such, because Thatcher fails to disclose all the elements of claim 1, claim 1 should be allowed.

Furthermore, claims 2-20 depend from and further define the subject matter of claim 1 and therefore should also be allowable over the cited prior art reference.

B. Aberin US Patent No. 6,406,892 ("Aberin")

Claims 1-15 and 17-22 were rejected under 35 U.S.C. § 102(b) as allegedly being unpatentable over Aberin. Applicants respectfully traverse the rejection.

Claim 1 recites in pertinent part,

> "A method for the chromatographic separation of a nucleic acid mixture wherein plasmid DNA is separated from other components of the mixture, especially other nucleic acids, characterised in that
> **(a) as appropriate the nucleic acid mixture is adjusted with one or more alkali salts and/or alkaline earth salts in aqueous solution to a conductance that is equivalent to a conductance of 70 mS to 95 mS at a pH of 4.8 to 5.4 at a temperature of 20°C."**

At a minimum, the cited prior art does not disclose (expressly or inherently), a method in which "(a) as appropriate the nucleic acid mixture is adjusted with one or more alkali salts and/or alkaline earth salts in aqueous solution **to a conductance that is equivalent to a conductance of 70 mS to 95 mS at a pH of 4.8 to 5.4 at a temperature of 20°C**."

Aberin does not disclose any conductivity with regard to binding **step (a)**. Indeed in contrast to the Examiner's assertion, col. 2, lines 47-67 and col. 3, lines 1-13 do not make any disclosure of conductivity with regard to the binding solution step, **step (a)**.

Moreover, conductivity is only disclosed in connection with in Fig. 1, and it is clear from Aberin col. 4, lines 28-34 that the measured conductivity of the **eluate** was monitored, but not of the **binding solution**, as recited in claim 1, step (a).

Moreover, Aberin does not generally disclose suitable eluting reagents and only discusses "elution buffer of conventional composition, with such common modifications as a salt

gradient," (col. 3, lines 49-54). Aberin fails to disclose which salt may be used and in particular fails to disclose or suggest alkali salts or alkaline earth salts .

The only example of elution provided in Aberin was carried out by using a sodium phosphate gradient (see Aberin col. 4, lines 24-28).

In addition, the alkali salts cited by the Examiner as allegedly within the range of 270 mM or higher, are not used in the elution step as recited in claim 1, (see Aberin col. 4, lines 9-22).

Therefore, because Aberin fails to disclose all the elements of claim 1, claim 1 should be allowed.

Furthermore, claims 2-20 depend from and further define the subject matter of claim 1 and therefore should also be allowable over the cited prior art reference.

VI. Claim Rejections under 35 U.S.C. § 103(a)

Claim 16 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious in view of Thatcher in view of Colpan et al., US Patent No. 5,990,301 ("Colpan"). Applicants respectfully disagree.

In order to establish a *prima facie* obviousness rejection under 35 U.S.C. § 103(a), basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Further, "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F. 3d 977, 988 (Fed. Cir. 2006).

As discussed above, Thatcher fails to disclose all the elements of claim 1, and at a minimum fails to teach (expressly or inherently), a method in which "**(d) the plasmid DNA** bound to the chromatographic stationary phase is subsequently **eluted with a solution comprising an alkali salt in a concentration of 1300 mM or higher based on a pH of 7 to 7.4 and/or an alkaline earth salt in a concentration of 270 mM or higher based on a pH of 7 to 7.4.**"

Moreover, Thatcher teaches away from using a method in which the plasmid DNA is eluted with an alkali salt having a concentration of 1300 mM or higher based on an pH or 7 to 7.4 because Thatcher explicitly defines that "[p]lasmid DNA is eluted in the 0.75 M to 1.0 M wash," (see Aberin col. 16, lines 56-57). That is, Thatcher distinguishes between elution in general and elution in plasmid DNA, explicitly requiring a lower concentration to elute plasmid DNA.

Colpan fails to cure the deficiencies of Thatcher since Colpan does not teach or suggest a method in which "the plasmid DNA bound to the chromatographic stationary phase is subsequently eluted with a solution comprising an alkali salt in a concentration of 1300 mM or higher based on a pH of 7 to 7.4 and/or an alkaline earth salt in a concentration of 270 mM or higher based on a pH of 7 to 7.4."

Colpan merely teaches a method "wherein the method comprises preparation of the stationary phase." (See Office Action of March 17, 2008 at page 7, citing Colpan col. 7, line 9-67, col. 4, line 60-67, col. 5, line 1-67).

As such, none of the cited prior art, either alone or in combination, teach or suggest all of the elements of claim 1.

Accordingly, claim 1 should be allowed.

Furthermore claims 2-20 depend from and further define the subject matter of claim 1 and therefore should also be allowed.

VII. Conclusion

In view of the above amendments and remarks, Applicants respectfully submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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